

COASTAL ADAPTATION OPTIONS For Delaware

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Committee

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GEORGETOWN CLIMATE CENTER

The Georgetown State-Federal Climate Resource Center

How to Respond?

- What are our options?
- How do we choose—what are the tradeoffs?



What Are My Options?

Adaptation Strategies



Regulatory Approaches

Tools

Examples



- Flood-proofing
- Elevation / freeboard
- Setbacks / Buffers

- Community Rating System
- Kauai, HI
- MD Critical Areas Act



- Hard-armoring permitting
- Design standards for armoring
- Mitigation standards for armoring

- ACE SLR guidelines



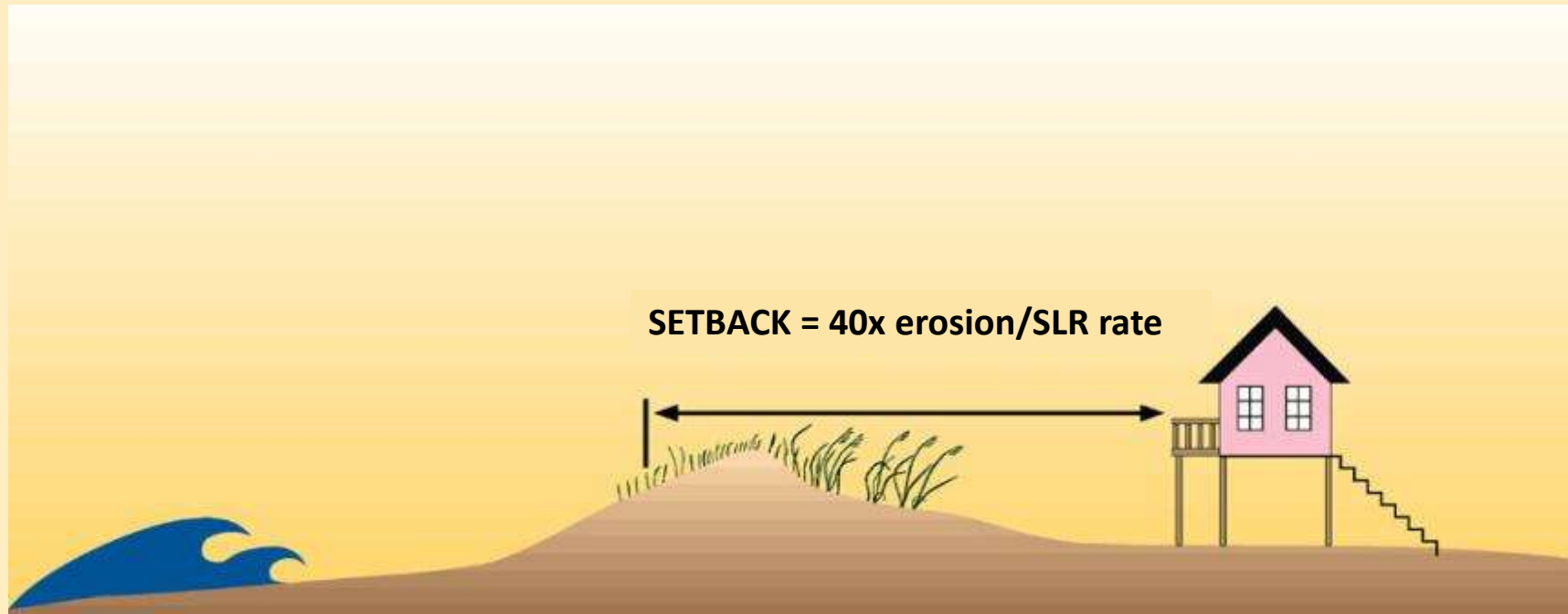
- Soft-armoring permitting
- Limits on septic
- Downzoning
- Rebuilding restrictions

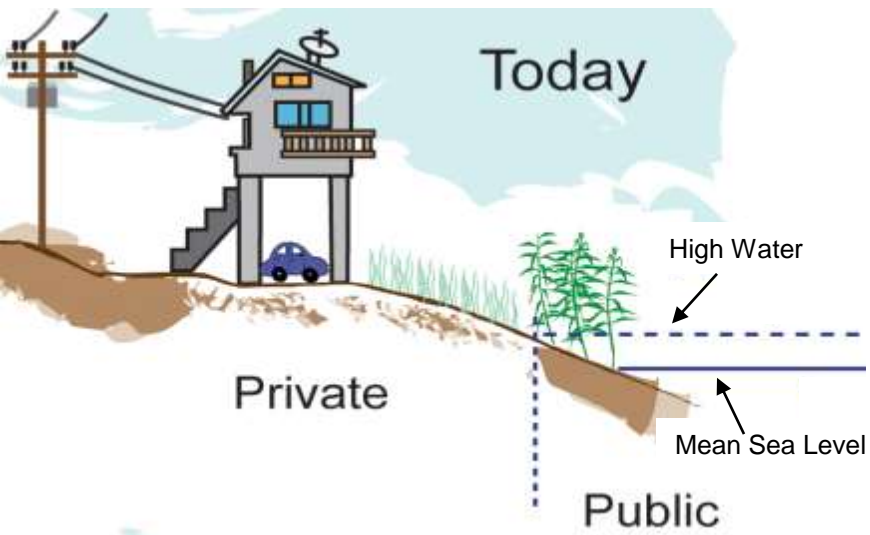
- Maryland Living Shorelines protection Act
- Maine Beach Act

Setbacks: developing out of harm's way

Development occurs a set distance from the shore

Setback can be dynamic in coastal areas





“Rolling Easements”

Mechanism

Owner agrees to limitations

Boundary shifts with water line

Removal of structures when water encroaches

Investment Approaches

Tools

Examples



- Elevate public facilities
- Acquisitions / easements
- Beach nourishment

- LA, Hwy 10
- CA Coastal Conservancy guidelines
- CA Sediment Management Work Group



- Funding for regional protection projects

- ACE's SAGE program



- Buyouts and acquisitions
- Limit public expenditures
- Relocate infrastructure

- Reroute of Hwy 1 in California
- Pacifica, CA managed retreat

Incentive-Based Approaches

Tools

Examples

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- Tax incentives, rebates or credits for retrofits
 - Siting incentives
 - Fast-track permitting

- Hull, MA

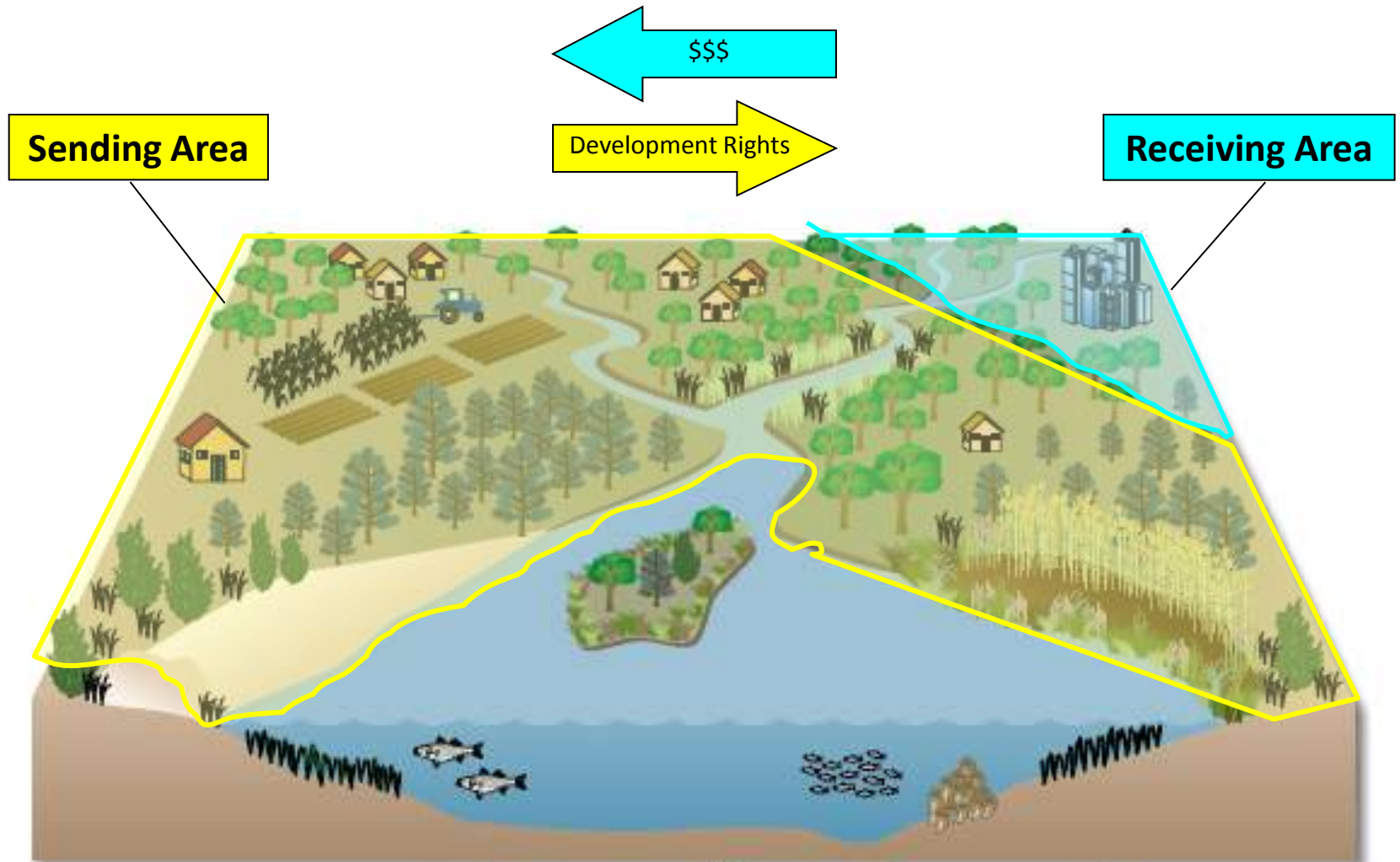
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- Streamlined permitting

- Maryland Living Shorelines Act

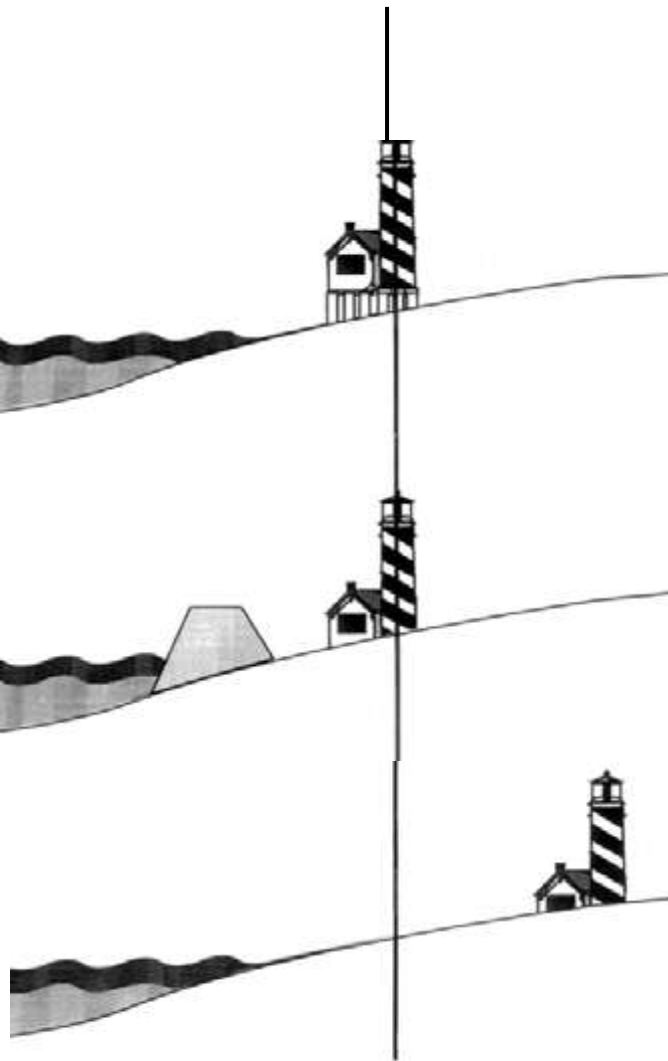
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- Real estate disclosures
 - TDCs
 - Conservation easements
 - Density bonuses Cluster development

- CA hazards disclosure
- Montgomery County, MD
- VA conservation easements tax credits

Transfer Development Rights



Choosing Between Options: Year 1



Accommodate

Protect

Retreat

Social

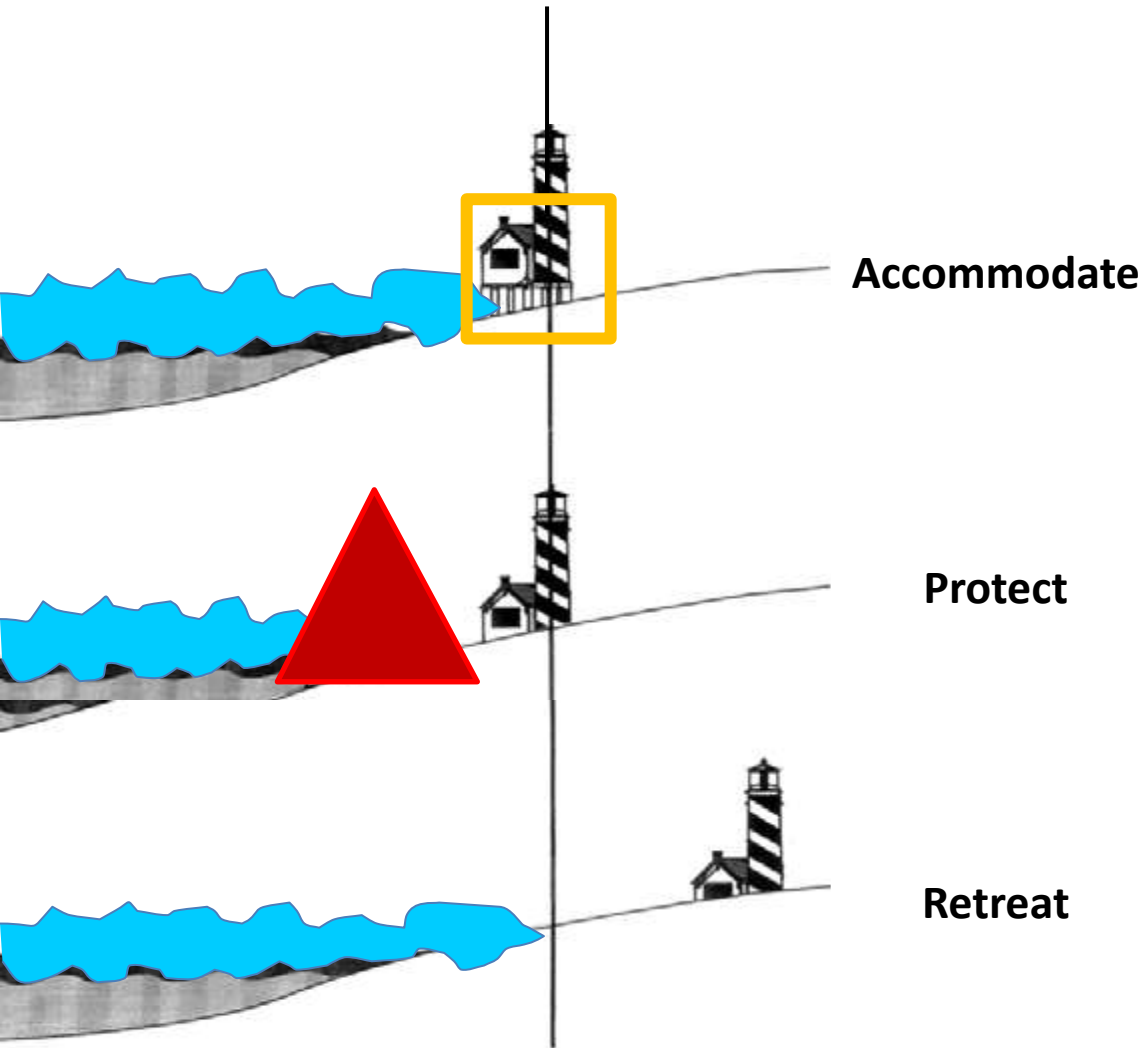
Environ.

Economic



	Social	Environ.	Economic
Accommodate	~	~	~
Protect	+	!	!
Retreat	!	+	!

Tradeoffs? Year 100



	Social	Environ.	Economic
Accommodate	?	~	?
Protect	?	!	?
Retreat	!	+	?





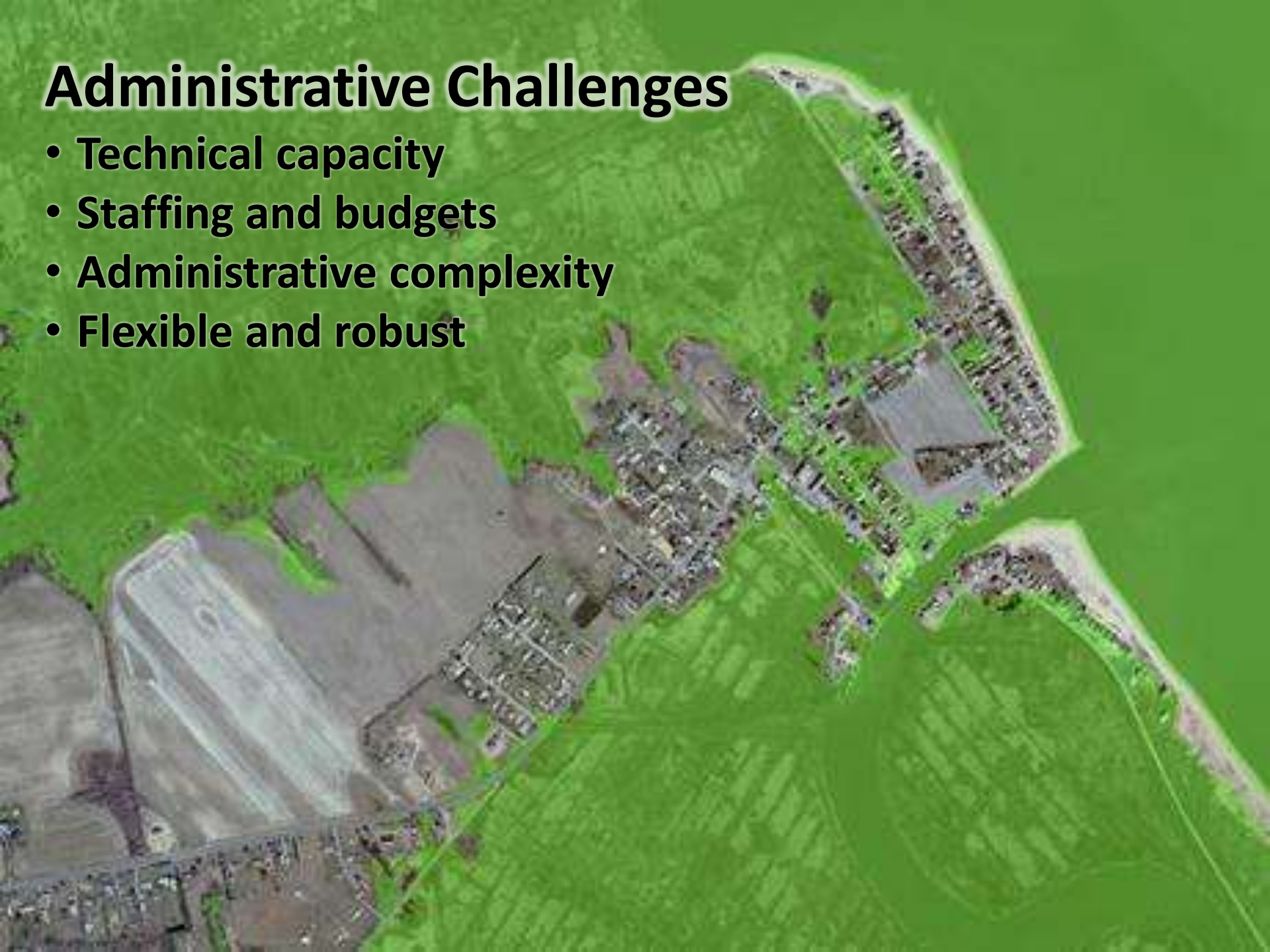


Is it legal?

Question	Analysis
Authority?	<ul style="list-style-type: none">• Local authority to zone and plan• State agency role
State laws?	<ul style="list-style-type: none">• Preemption• Overlapping / conflicting legal authority (coastal act, floodplains requirements, wetlands regulations)
Federal laws ?	<ul style="list-style-type: none">• National Flood Insurance Program• Clean Water Act
Constitutional?	<ul style="list-style-type: none">• Takings• Substantive due process

Administrative Challenges

- Technical capacity
- Staffing and budgets
- Administrative complexity
- Flexible and robust

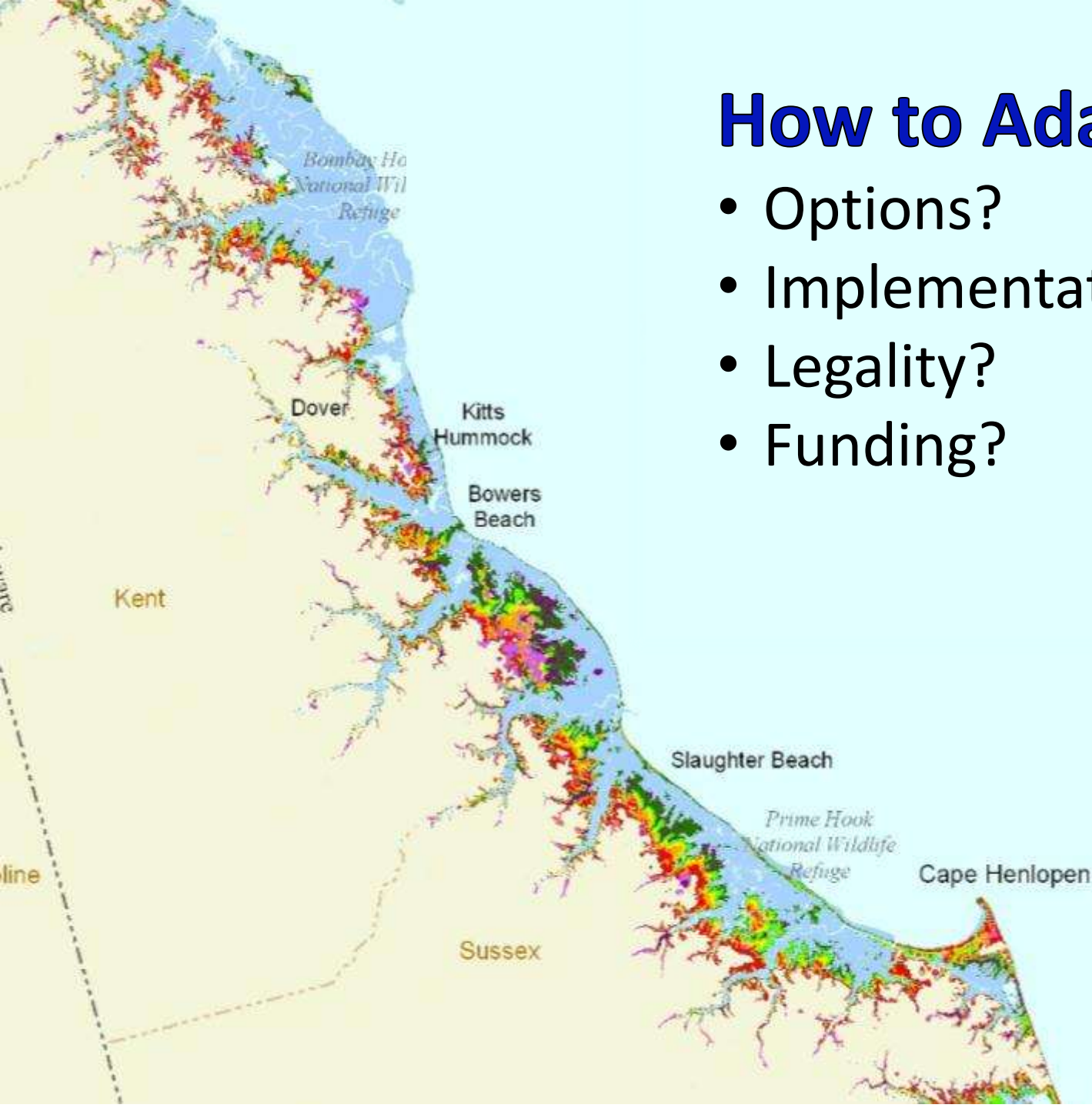


Tactics using existing frameworks

	Doing Now	Could Do	Barriers?
Regulatory	Elevation-based setbacks	Update maps given changes in sea levels	Takings?
	Limit armoring along oceanfront	Extend limitations to estuarine shorelines	Change in law
	Require CIPs	Include SLR in CIPs	Change in law?
Spending	Beach nourishment	Sediment management	Economic sustainability
	Acquisitions / easements	Prioritize funding	Cost, authority?
Incentives		Real estate disclosures	Impacts to real estate market
		TDRs	Authority

How to Adapt

- Options?
- Implementation?
- Legality?
- Funding?



GCC's Assistance to State and Local Governments

Question	GCC Work Product
What are our options?	<ul style="list-style-type: none">• Sea Level Rise Tool Kit
How do we legally implement a policy?	<ul style="list-style-type: none">• Model SLR overlay zone
Is a policy consistent with other federal laws?	<ul style="list-style-type: none">• Analysis Army Corps permitting• Analysis National Flood Insurance Program
Do we have the resources?	<ul style="list-style-type: none">• Federal programs for adaptation

A wide-angle photograph of a beach at dusk or dawn. The sky is filled with large, dramatic clouds in shades of blue, grey, and pink. The ocean is visible in the distance with a few small waves. The sandy beach in the foreground has several small figures of people scattered across it. On the far left, a portion of a lifeguard stand is visible.

For more information....

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<http://www.georgetownclimate.org/adaptation/>